



PATENT

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In re PATENT APPLICATION of

Nobuyuki KAWAI et al.	)	
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Appln. No.: 08/904,312	)	Group: 2746
	)	
Filed: July 31, 1997	)	Examiner: L. Nguyen
	)	
For: METHOD AND APPARATUS	)	Atty Dkt: 2918.11008
FOR TRANSMITTING DATA	)	

**SUPPLEMENTAL APPEAL BRIEF**

Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

This Supplemental Appeal Brief is submitted to correct an obvious typographical error. Specifically, Applicants' arguments (now appearing on page 7) regarding the final rejection of claims 19-24 and 27-30 now correctly states that claims 19-24 and 27-30 are patentable over Spragins in view of Fujikura et al. Additionally, the Real Party in Interest has been corrected to now state that Inmarsat, Ltd., a United Kingdom limited corporation, is the Real Party in Interest.

This Supplemental Appeal Brief is submitted under the provisions of 35 U.S.C. § 134 and 37 C.F.R. § 1.192 in support of an appeal from the final rejection of claims 1-4, 9-16, 19-24, 27-30 and 35-38 of the above-captioned patent application. An Appeal Brief was submitted November 13, 2001, also under the provisions of 35 U.S.C. § 134 and 37 C.F.R. § 1.192 in

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support of an appeal from the final rejection of claims 1-4, 9-16, 19-24, 27-30 and 35-38 of the above-captioned patent application. The Appeal Brief was filed with a Petition For Extension of Time (1 month) and the requisite fee prior to the expiration of the one-month extension of time period ending on a weekend (Saturday, November 10, 2001) followed by a Federal Holiday (Veterans' Day, Monday, November 12, 2001). A Notice of Appeal from the final rejection of claims 1-4, 9-16, 19-24, 27-30 and 35-38 was timely filed on August 10, 2001, along with a Petition For Extension Of Time.

A copy of claims 1-4, 9-16, 19-24, 27-30 and 35-38 is included in the Appendix to this Supplemental Appeal Brief.

This Supplemental Appeal Brief is being submitted in triplicate and, while Applicants believe that no additional fees are required for the submission of this Supplemental Appeal Brief, the Assistant Commissioner is authorized to charge our Deposit Account No. 19-0733 for this submission.

#### **REAL PARTY IN INTEREST**

The Assignee, Inmarsat Ltd., a United Kingdom limited corporation, having an office at 99 City Road, London EC1Y 1AX, Great Britain, is the real party in interest in this appeal from the final rejection of the above-captioned patent application.

### **RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the Applicants, Assignee or Assignee's undersigned legal representative that will directly affect or be directly affected by or have a hearing on the Board's decision in this pending appeal.

### **STATUS OF CLAIMS**

The appealed claims, claims 1-4, 9-16, 19-24, 27-30 and 35-38, were finally rejected by an Office Action mailed April 10, 2001. Claims 5-8 and 31-34 have been allowed. Claims 39-50 have been withdrawn from consideration based on a Restriction Requirement.

### **STATUS OF AMENDMENTS**

No Amendments have been filed subsequent to the final rejection mailed April 10, 2001. The claims set forth in the Appendix attached to this Brief set forth the state of the finally-rejected claims.

### **SUMMARY OF INVENTION**

The claimed invention, as shown in Figures 1-4, is directed to a method and apparatus for updating a plurality of location registers in a mobile communications system from a central location register. For example, in a mobile communication system, it is necessary to maintain a database of mobile users, including information relating to the last known location of each mobile user so that calls are routed efficiently. When the mobile communications system is

satellite based, a network global location register (GLR-N) stores information relating to the current location of mobile users logged onto the mobile satellite communication system. (See specification page 6, lines 19-25.) The GLR-N communicates with a plurality of Land Earth Stations (LES) that each include a global location register (GLR-L). Each GLR-L stores a copy of the data stored in the GLR-N. (See Figure 1.) Preferably, the information is broadcast in an High-level Data Link Control (HDLC) format conforming generally to ISO standards ISO/IEC 3309, ISO/IEC 4335 and ISO/IEC 7809, and specifically within ISO/IEC 7809, options 3 (single frame retransmission), 4 (unnumbered information) and 8 (command I frames only) are adopted. (See specification, page 9, lines 14-22.)

The forward link from the GLR-N to each of the GLR-Ls of the system is susceptible to noise in both the uplink to a satellite and the downlink from the satellite to the GLR-L. Uplink noise affects the quality of all of the downlinks equally, while downlink noise affects only the relevant downlink. Consequently, some transmission errors will be common to all GLR-L and some transmission errors will be specific to one or more GLR-L. (See specification, page 14, lines 16-23.) In that regard, the present invention provides an error correction protocol that maximizes the broadcast throughput for a given bit error rate. Accordingly, the GLR-N broadcasts a series of information frames I containing location register information to each GLR-L over a broadcast channel. Periodically, each GLR-L responds with an unsolicited response signal  $R_0$  that may be a receive read (RR) frame or a selective request frame (SREJ). (See Figure 4.) An RR frame indicates that no frame retransmission is required, and an SREJ frame indicates which particular information frames (i.e., a sequence order number) should be

rebroadcast. (See specification, page 15, lines 2-10, and page 16, line 24, through page 17, line 11.) While the approach of the present invention is inherently more complicated than other conventional error correction systems, such as a go-back-N error correction scheme, the present invention provides a high broadcast throughput for a given permissible bit error rate. (See specification, page 3, lines 4-11.) On receipt of an SREJ frame, the GLR-N only retransmits the requested data when the requested data has not previously been transmitted within a predetermined period of time. (See specification page 4, lines 21-24.)

According to one aspect of the present invention, the GLR-N broadcasts a new information frame that has not been previously broadcast only when a sequential order of the new information frame is not greater than a sequence order of the earliest of the frames that has been indicated to not have been received by any one of the GLR-L by a predetermined number. (See specification page 16, line 24, through page 17, line 11.)

## ISSUES

The issues in this appeal are whether:

1. Claims 19-24 and 27-30 are unpatentable under 35 U.S.C. § 103(a) over Spragins et al., Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992, in view of Fujikura et al., U.S. Patent No. 4,901,313;

2. Claims 1-4 are unpatentable under 35 U.S.C. § 103(a) over Wiedeman, U.S. Patent No. 5,303,286, in view of Smolinske et al., U.S. Patent No. 5,487,068, and Fujikura et al., U.S. Patent No. 4,901,313;

3. Claims 9 and 10 are unpatentable under 35 U.S.C. § 103(a) over Smolinske et al., U.S. Patent No. 5,487,068, in view of Spragins et al, Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992;

4. Claims 11-16 are unpatentable under 35 U.S.C. § 103(a) over Smolinske et al., U.S. Patent No. 5,487,068, in view of Ellis et al., U.S. 5,497,371, and Fujikura et al., U.S. Patent No. 4,901,313; and

5. Claims 35/21, 36/24, 37/21 and 38/24 are unpatentable under 35 U.S.C. § 103(a) over Spragins et al., Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992, and Wiedeman, U.S. Patent No. 5,303,286, and Fujikura et al., U.S. Patent No. 4,901,313?

### **GROUPING OF CLAIMS**

Applicants consider that the claims rejected under each ground of rejection are grouped together. That is, claims 19-24 and 27-30 are a first grouping of claims (Group 1). Claims 1-4 are a second grouping of claims (Group 2). Claims 9 and 10 are a third grouping of claims (Group 3). Claims 11-16 are a fourth grouping of claims (Group 4), and claims 35/21, 36/24, 37/21 and 38/24 are a fifth grouping of claims (Group 5). Each respective grouping of claims stands and falls together, separately from each of the other groupings of claims.

## ARGUMENTS

### 1. Claims 19-24 and 27-30 (Group 1)

Claims 19-23 and 27-30 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Spragins et al. (Spragins) (Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992) in view of Fujikura et al. (Fujikura), U.S. Patent No. 4,901,313.

Applicants respectfully submit that claims 19-24 and 27-30 are patentable over Spragins in view of Fujikura et al. (Applicants note that the rejection stated by the Examiner is directed to claims 19-23 and 27-30. The remarks supporting the rejection, however, include remarks directed to claim 24. Consequently, Applicants arguments supporting patentability are directed to claims 19-24 and 27-30.)

Applicants respectfully submit that the present invention according to any of claims 19-24 and 27-30 is patentable over Spragins in view of Fujikura. Applicants respectfully submit that the applied patents are not properly combinable to form a basis for rejection of these claims. Further, the device and method resulting from the proposed combination is not the present invention.

Contrary to the Examiner's statement regarding claims 19-24 and 27-30, there is no suggestion in either Spragins or Fujikura "to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth." In fact, Applicants respectfully submit that the Examiner's proffered motivation, i.e., to conserve the system bandwidth of Spragins, does not make sense in view of the actual disclosure of each respective reference. Specifically, the Spragins system exemplified by Figure 7.13(b) already conserves system bandwidth by

retransmitting "[o]nly the erroneous frame". (See Spragins, page 328, lines 31-33, and Figure 7.13(b).) The Fujikura a-point-to-multi-point broadcast system conserves system bandwidth by providing a master station that only retransmits a frame having a sequence number indicated by a received retransmission request frame as being abnormally received by a slave station. (See Fujikura, column 7, lines 4-31.)

Thus, Applicants respectfully submit that the combination of Spragins in view of Fujikura would not be formed by one of ordinary skill in the art particularly based on the concept of conserving system bandwidth, and that neither Spragins nor Fujikura suggest the combination proposed by the Examiner.

Moreover, even if the proposed combination of Spragins in view of Fujikura is formed (or for that matter, if Fujikura were considered alone), the resulting device and method is not the present invention according to at least any of claims 19-24.

Regarding claim 19, Applicants respectfully submit that Spragins does not disclose an apparatus for receiving data from a broadcast station having means for transmitting to the broadcast station at predetermined intervals an error status signal. At best, Spragins discloses a poll bit P set by a station acting as a primary must be paired with an F bit received from the other station (acting as a secondary) before another P bit can be sent, and vice versa. (See Spragins, page 328, lines 1-3.) Nevertheless, according to Spragins, the nature of the error that the error correction request signal is used for is a random event. Based on the random nature of an error event, it follows that Spragins does not transmit the error correction request signal at predetermined intervals. Moreover, Spragins provides insufficient disclosure to fairly conclude



that the poll bit P is transmitted at the claimed predetermined intervals so that a secondary station has the claimed means for transmitting to a primary station at predetermined intervals an error status signal.

Regarding Fujikura, Fujikura discloses that a slave station transmits a response frame based on a calculated timing decision that is a function of the send sequence number of a received frame. (See Fujikura, column 5, lines 33-54, and column 9, lines 7-18.) Moreover, when a slave station receives a point-to-multi-point frame that is not addressed to the slave station, the slave station "erases" the received frame. (See Fujikura, column 8, lines 51-56.) Additionally, a Fujikura master station transmits all frames stored in buffer 204 without waiting for a response from individual slave station. (See Fujikura, column 12, lines 5-10.) In view of the disclosure by Fujikura, the sequence send number, as seen and used by a slave station, undoubtedly cannot be considered to provide the claimed periodic intervals.

Fujikura also discloses that a slave station transmits a retransmission request frame whenever a point-to-multi-point frame is abnormally received. Specifically, when an abnormally-received frame is detected, the slave station generates a retransmission request frame, which is placed in a buffer 308, and a transmitting interface 309 reads the retransmission frame out of buffer 308 in a first-in, first-out (FIFO) manner. (See Fujikura, column 5, lines 55-59, column 9, lines 21-48, and column 12, lines 15-22.) Plainly, a Fujikura retransmission request frame is not sent on a periodic interval.

Therefore, Fujikura does not provide a slave station that has the claimed means for transmitting to a central station at predetermined intervals an error status signal that indicates whether error correction information is required from the central station.

Thus, claim 19 is patentable over Spragins in view of Fujikura. It follows that claims 20, and 21, which each incorporate the limitations of claim 19, are each patentable over Spragins in view of Fujikura for at least the same reasons that claim 19 is considered allowable.

Applicants respectfully submit that claim 22 is patentable over Spragins in view of Fujikura for reasons that are similar to the reasons that claim 19 is considered patentable. That is, neither Spragins nor Fujikura disclose or suggest a method having a step of transmitting to a broadcast station at predetermined intervals an error status signal which indicates whether error correction information is required from a central station. It follows that claims 23 and 24, which each incorporate the limitations of claim 22, are patentable over Spragins in view of Fujikura for at least the same reasons that claim 22 is considered patentable.

Regarding claim 27, Applicants respectfully submit that claim 27 is patentable over Spragins in view of Fujikura for at least the same reasons that Applicants submit that Spragins and Fujikura are not properly combinable to form a basis for the rejection of claims 19-24. That is, the combination of Spragins in view of Fujikura would not be formed by one of ordinary skill in the art particularly based on the concept of conserving system bandwidth, and that neither Spragins nor Fujikura suggest the combination proposed by the Examiner.

Thus, claim 27 is allowable over Spragins in view of Fujikura. It follows that claim 28, which incorporates the limitations of claim 27, is allowable over Spragins in view of Fujikura for at least the same reasons that claim 27 is considered allowable.

Applicants respectfully submit that claim 29 is patentable over Spragins in view of Fujikura for reasons that are similar to the reasons that claim 27 is considered patentable. That is, the combination of Spragins in view of Fujikura would not be formed by one of ordinary skill in the art particularly based on the concept of conserving system bandwidth, and that neither Spragins nor Fujikura suggest the combination proposed by the Examiner. It follows that claims 23 and 24, which each incorporate the limitations of claim 22, are patentable over Spragins in view of Fujikura for at least the same reasons that claim 22 is considered patentable.

Thus, Applicants respectfully submit that it is only by impermissible hindsight that the Examiner is able to reject claims 19-24 and 27-30 based on the combination of Spragins and Fujikura. Neither of the applied references provides a proper suggestion for combination. It is only by the Applicants disclosure that the Examiner can select particular features of Spragins and Fujikura to make the rejection.

Consequently, Applicants respectfully request that the Board reverse the final rejection of claims 19-24 and 27-30.

## **2. Claims 1-4 (Group 2)**

Claims 1-4 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Wiedeman, U.S. Patent No. 5,303,286 in view of Smolinske et al. (Smolinske), U.S. Patent No. 4,901,313, and Fujikura.

Applicants respectfully submit that the present invention according to any of claims 1-4 is patentable over Wiedeman in view of Smolinske and Fujikura. Applicants respectfully submit that the applied patents are not properly combinable to form a basis for rejection of these claims.

Contrary to the Examiner statement, there is no suggestion in Wiedeman or Smolinske "to provide the broadcast for Fujikura to the system of Wiedeman in order to conserve bandwidth." Applicants respectfully submit that there is no disclosure in Wiedeman or Smolinske relating to broadcasting of data from a central station to a plurality of location stations, as the term "broadcasting" is understood in the art. Moreover, Wiedeman relates to a point-to-point communication system while Fujikura relates to a point-to-multi-point communication system. (See Wiedeman, column 3, line 54, through column 4, line 1, and Fujikura, column 4, line 64, through column 5, line 1.) Further, Wiedeman provides no disclosure that system bandwidth is a problem and, accordingly, no disclose providing techniques conserving system bandwidth.

Thus, Applicants respectfully submit that the proffered combination of Wiedeman, Smolinske and Fujikura is formed by impermissible hindsight because none of Wiedeman, Smolinske and Fujikura suggests the combination.

Consequently, Applicants respectfully request that the Board reverse the final rejection of claims 1-4.

**3. Claims 9 and 10 (Group 3)**

Claims 9 and 10 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Smolinske in view of Spragins and Fujikura.

Applicants respectfully submit that the present invention according to any of claims 9 and 10 is patentable over Smolinske in view of Spragins and Fujikura. Applicants respectfully submit that even if the applied patents are properly combinable to form a basis for rejection of these claims, the device and method resulting from the proposed combination is not the present invention.

Specifically regarding claim 9, none of Smolinske, Spragins and Fujikura disclose or suggest an apparatus for broadcasting data to a plurality of data receiving stations having the claimed means for broadcasting that is operable to broadcast a new frame which has not been previously broadcast only if a sequential order of the new frame is not greater than a sequence order of the earliest of the frames which has been indicated to not have been received by any one of the receiving stations by a predetermined number. Essentially, the invention of claim 9 includes a "sliding window" that restricts that difference between the sequence number of new frames that are to be transmitted and the lowest sequence number of a frame transmitted, but not correctly received by all stations. Applicants respectfully submit that to conclude that Figures 7.13a and 7.13b provide the invention of claim 9 is without basis. Spragins plainly

provides no disclosure that a central station includes a sliding window that broadcasts a new frame that has not been previously broadcast only if a sequential order of the new frame is not greater than a sequence order of the earliest of the frames that has been indicated to not have been received by any one of the receiving stations by a predetermined number.

Thus, Applicants submit that claim 9 is patentable over Smolinske in view of Spragins and Fujikura.

Applicants respectfully submit that claim 10 is allowable for reasons that are similar to the reasons that claim 9 is considered allowable.

Consequently, Applicants respectfully request that the Board reverse the final rejection of claims 9 and 10.

#### **4. Claims 11-16 (Group 4)**

Claims 11-16 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Smolinske in view of Ellis et al. (Ellis), U.S. Patent No. 5,497,371, and Fujikura.

Applicants respectfully submit that the present invention according to any of claims 11-16 is patentable over Smolinske in view of Ellis and Fujikura. Applicants respectfully submit that the applied patents are not properly combinable to form a basis for rejection of these claims. Applicants respectfully submit that to proffer a motivation to combine Smolinske with Fujikura that is based on conserving system bandwidth without specifically pointing out where in Smolinske concerns regarding system bandwidth are set forth is really nothing more than

hindsight. It is only by the Applicants' disclosure that the Examiner can select particular features of Smolinske, Ellis and Fujikura to make the rejection.

Consequently, Applicants respectfully request that the Board reverse the final rejection of claims 11-16.

**5. Claims 35/21, 36/24, 37/21 and 38/24 (Group 5)**

Claims 35/21, 36/24, 37/21 and 38/24 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Spragins and Wiedeman and Fujikura.

Applicants respectfully submit that the present invention according to any of claims 35/21, 36/24, 37/21 and 38/24 is patentable over Spragins, and Wiedeman and Fujikura. Applicants respectfully submit that it is only by the Applicants' disclosure that the Examiner can select particular features of Spragins, Wiedeman and Fujikura to make this rejection.

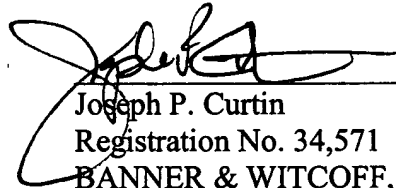
Consequently, Applicants respectfully request that the Board reverse the final rejection of claims 35/21, 36/24, 37/21 and 38/24.

**CONCLUSION**

It is respectfully submitted that claims 1-4, 9-16, 19-24, 27-30 and 35-38 are patentable over the applied combinations of art, and it is respectfully requested that the final rejection of claims 1-4, 9-16, 19-24, 27-30 and 35-38 be reversed.

Respectfully submitted,

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## APPENDIX

### CLAIMS

1. Apparatus for broadcasting data relating to the status of user terminals in a mobile communications system from a central station having a database for storing said data to a plurality of local stations each having a local database for storing said data, the apparatus comprising means for broadcasting said data in a common channel receivable by each of said local stations; means for receiving error correction request signals from each of said local stations; and means for sending error correction signals to each of said local stations in response to said error correction request signals.

2. Apparatus as claimed in claim 1, wherein said data is broadcast in a plurality of frames, said error correction request signals indicated selected ones of said frames, and said means for sending error correction signals is responsive to said error correction request signals to retransmit the selected frames.

3. A method of broadcasting data relating to the status of user terminals in a mobile communications system from a central station having a database for storing said data to a plurality of local stations each having a database for storing said data, the method comprising broadcasting said data in a common channel receivable by each of said local stations; receiving error correction request signals from each of said local stations; and sending error correction signals to each of said local stations in response to said error correction request signals.

4. A method as claimed in claim 3, wherein said data is broadcast in a plurality of frames, said error correction request signals indicate selected ones of said frames, and the step of sending error correction signals comprises retransmitting said selected frames.

9. Apparatus for broadcasting data to a plurality of data receiving stations, comprising:

means for broadcasting said data in a common channel receivable by each of said receiving stations in a format comprising a plurality of frames;

means for receiving error correction request signals indicating selected ones of said frames from each of said receiving stations;

means for broadcasting said selected frames to each of said receiving stations in response to said error correction request signals and means for receiving from each of said receiving stations acknowledgment signals indicating the earliest of said frames which has not been received by that station, wherein the means for broadcasting is operable to broadcast a new frame which has not been previously broadcast only if a sequential order of said new frame is not greater than a sequence order of the earliest of said frames which has been indicated to not have been received by any one of said receiving stations by a predetermined number.

10. A method of broadcasting data to a plurality of data receiving stations, comprising:

broadcasting said data in a common channel receivable by each of said receiving stations in a format comprising a plurality of frames;

receiving error correction request signals indicating selected ones of said frames from one or more of said receiving stations;

rebroadcasting said selected frames to said receiving stations; and receiving from each of said receiving stations acknowledgment signals indicating the earliest in sequence of said frames which has not been received by that local station, wherein a new frame which has not previously been broadcast is broadcast only if a sequential order of said new frame is not greater than a sequence order of the earliest of said frames which has been indicated to have not been received by any one of said local stations by a predetermined number.

11. Apparatus for transmitting data to a plurality of data receiving stations, comprising:

means for broadcasting said data in a common channel receivable by each of said receiving stations in a format comprising a plurality of frames;

means for receiving error correction request signals indicating selected ones of said frames from each of said receiving stations; and

means for broadcasting said selected frames to each of said receiving stations in response to said error correction request signals; wherein the frames are broadcast in a format including frame sequence information indicating the sequence of each frame, but not including

receive state information indicating the sequence of any frames received from any of the receive stations.

12. Apparatus as claimed in claim 11, wherein the frames are broadcast in a format complying with the standard ISO/IEC 7809, option 10, except that some or all of the receive state variable field as defined in that standard is occupied by the send state variable field.

13. Apparatus as claimed in claim 12, wherein the send state variable field is eleven bits in length.

14. A method of broadcasting data to a plurality of data receive stations, comprising:  
broadcasting said data in a common channel receivable by each of said receiving stations in a format comprising a plurality of frames;  
receiving unsolicited error correction request signals indicating selected ones of said frames from one or more of said receiving stations; and  
rebroadcasting said selected frames to said receiving stations; wherein the frames are broadcast in a format including frame sequence information indicating the sequence of each frame, but not including receive state information indicating the sequence of any frames received from any of the local stations.

15. A method as claimed in claim 14, wherein the frames are transmitted in a format complying with the standard ISO/IEC 7809, option 10, except that some of all of the receive state variable field as defined in that standard is occupied by the send state variable field.

16. A method as claimed in claim 15, wherein the send state variable field is eleven bits in length.

19. Apparatus for receiving data from a broadcast station, comprising means for receiving said data and means for transmitting to the broadcast station at predetermined intervals as error status signal which indicates whether error correction information is required from the central station.

20. Apparatus as claimed in claim 19, wherein the means for transmitting is additionally responsive to a polling signal from the central station to transmit said error status signal.

21. Apparatus as claimed in claim 19 or 20, wherein said data is broadcast in a plurality of frames, and wherein said error status signal comprises either an error correction request signal indicating selected ones of said frames which were not correctly received, or a signal indicating that no error correction is required.

22. A method of receiving data from a broadcast station, comprising receiving said data and transmitting to the broadcast station at predetermined intervals an error status signal which indicates whether error correction information is required from said central station.

23. A method as claimed in claim 22, further comprising additionally transmitting said error status signal in response to a polling signal from said broadcast station.

24. A method as claimed in claim 22 or 23, wherein said data is broadcast in a plurality of frames and said error status signal comprises either an error correction request signal indicating selected ones of said frames which were not correctly received, or a signal indicating that no error correction is required.

27. Apparatus for receiving data from a broadcast station, comprising:  
means for receiving said data in a format comprising a sequence of frames; and  
means for transmitting signals to said broadcast station in a format including receive state information indicating a sequence number of the last in sequence of the received frames, but not including a transmit state field.

28. Apparatus as claimed in claim 27, wherein the frames are transmitted in a format complying with the standard ISO/IEC 7809, option 10, except that some or all of the send state variable field as defined in that standard is occupied by the receive state variable field.

29. A method of receiving data from a broadcast station, comprising:  
receiving said data in a format comprising a sequence of frames; and  
transmitting signals to said broadcast station in a format including receive state information indicating a sequence number of the last in sequence of the received frames, but not including transmit state information field.

30. A method as claimed in claim 29, wherein the frames are transmitted in a format complying with the standard ISO/IEC 7809, option 10, except that some or all of the send state variable field as defined in that standard is occupied by the receive state variable field.

35. Apparatus as claimed in claim 21 wherein the data is broadcast via satellite.

36. A method as claimed in claim 24 wherein the data is broadcast via satellite.

37. Apparatus as claimed in claim 21 wherein the data relates to the status of user terminals in a mobile communications system and each of the receiving stations has associated therewith a database for storing said data.

38. A method as claimed in claim 24 wherein the data relates to the status of user terminals in a mobile communications system and each of the receiving stations has associated therewith a database for storing said data.